

- You are not allowed to change or delete any postings – including your own.
 - No calculators to be used on these problems.
 - Please show all your steps – not just the final answer.
 - No partial credit will be given, so check your solutions very carefully before posting.
 - You will not get additional credit on any corrections you post to your own postings.
 - You will not get credit for repeated solutions/corrections.
 - The honor code applies to all these problems. You may consult your book and notes, but you are not allowed to get help from anyone.
-

1. Simplify. Assume that no variable is equal to zero.

$$\frac{-5x^{-3}y^3z^4}{20x^3y^{-7}z^4}$$

2. Simplify. Assume that no variable is equal to zero.

$$\left(\frac{8a^3b^{-2}}{16a^4b^{-3}} \right)^4$$

3. Simplify $-\frac{3}{4}x^2y(8xy^{-1} - 12x^{-3}y^2 + 16xy^2)$

4. Use long division to divide $(8x^4 - 4x^2 + x + 4) \div (2x + 1)$

5. Use synthetic division to find $\frac{9x^3 + 5x - 8}{3x - 2}$

6. Factor $6x^2 - 13x + 6$

7. Factor $3xy^2 - 48x^3$

8. Simplify $\frac{x^2 - 6x + 9}{(x^2 - 9)(x + 3)^{-1}}$

9. Simplify $\sqrt[3]{-128}$

10. Simplify $\sqrt{25x^4y^6}$

11. Simplify $\sqrt{4x^2 - 4x + 1}$

12. Simplify $(x - 3)(x^2 + 4x - 1)$

13. Factor $y^2 - 16$

14. Factor $x^2 - 9x + 18$

15. Factor $x^2 + 6x - 7$

16. Factor $25a^2 - 20ab + 4b^2$

17. Factor $6a^2 - 3a - 18$

18. Factor $2x^3 - 2x^2 - 40x$

19. Factor $2a^3 + 54$

20. Factor $8n^3 - 1$

21. Simplify $\left(\frac{1}{243}\right)^{\frac{3}{5}}$

22. Write the following with rational exponents.

$$\sqrt[3]{5x^2y}$$

23. Simplify $81^{-\frac{3}{4}}$

24. Solve $\sqrt{3x+6} + 2 \leq 5$

25. Solve $\sqrt[3]{5m+2} = 3$

26. Simplify $\frac{5-i\sqrt{3}}{5+i\sqrt{3}}$

27. Solve $9x^2 + 50 = 0$

28. Simplify $\frac{2x^2 - 12x + 18}{(x^2 - 9)(x + 3)^{-1}}$

29. Divide using long division $(10y^3 - 9y^2 + 6y - 10) \div (2y + 3)$

30. Divide using synthetic division $(y^4 + 5y^3 - 6y + 8) \div (2y + 4)$

31. . Simplify $\frac{2c^{\frac{1}{8}}}{c^{\frac{1}{16}} \cdot c^{\frac{1}{4}}}$

32. Solve $\sqrt{x+12} - \sqrt{x} = 2$

33. Factor $16x^2 - 40x + 6$

34. Factor $45x^2 - 60x + 20$

35. Solve $2\sqrt{x} - 3 = \sqrt{2x-1}$

36. Solve $1 - \sqrt{2x-6} \geq -7$

37. Factor $100x^3 - 4x$

38. Simplify $\frac{6x^2 + 7x - 3}{(2x+3)(3x+1)^{-1}}$